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ABSTRACT

A study examined the relationship of personal control-of-learning beliefs (learning locus of control) and three separate components of self-directed learning: cognitive strategy use, metacognitive self-regulation, and resource management. Subjects were 88 undergraduate and 2 graduate students from 3 institutions of higher education in Western New York and Northern Pennsylvania. Participants completed the Motivated Strategies for Learning Questionnaire that included separate scales for each variable examined. Findings suggested that cognitive strategy use was related to personal control-of-learning beliefs, and this relationship remained constant across three age groups, ranging from 17-49. Metacognitive strategy use was not related to personal control-of-learning beliefs, and this relationship also remained constant. Resource management was significantly related to personal control-of-learning beliefs. This relationship became significantly stronger from the 17- to 20-year-old range to the 21- to 25-year-old range, but not significantly so. The relationship then became less strong between the second group and the 26- to 49-year-old range, but not significantly so. The findings suggested that learning locus of control was related to two dimensions of self-directed learning, but age differences were found only for the resource management dimension. (Contains 19 references.) (Author/YLB)

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Running Head: SELF-DIRECTED LEARNING AND ADULTS

Self-Directed Learning and Adults:

The Role of Personal Control Beliefs

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This paper is based on findings presented at the Eastern Educational Research Association Annual Conference in Hilton Head, SC.
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Abstract

Many adult learning theorists believe that adult learners are naturally self-directing. Recent research indicates, however, that self-directed learning is related to individual characteristics, specifically locus of control, to a greater degree than to age alone. The present study attempted to examine the relationship of personal control-of-learning beliefs (learning locus of control) and three separate components of self-directed learning: cognitive strategy use, metacognitive self-regulation, and resource management. Ninety participants completed the Motivated Strategies for Learning Questionnaire, which includes separate scales for each of the variables examined. The findings suggest that cognitive strategy use is related to personal control-of-learning beliefs, and this relationship remains constant across three age groups, ranging from 17-49. Metacognitive strategy use is not related to personal control-of-learning beliefs, and this relationship also remains constant. Resource management is significantly related to personal control-of-learning beliefs. This relationship becomes significantly stronger from the 17- to 20-year-old range to the 21- to 25-year-old range. The relationship then becomes less strong between the second group and the and the 26- to 49-year-old range, but not significantly so. These findings suggest that learning locus of control is related to two dimensions of self-directed learning, but age differences are found only for the resource management dimension.

Self-Directed Learning and Adults:
The Role of Personal Control Beliefs

Self-directed learning is a major aspect of most theories of adult learning (Brookfield, 1986; Knowles, 1990; Tough, 1982). One problem with studying self-directed learning, however, is that each author defines the term in a different way. Some define self-directed learning in terms of when it occurs developmentally (Knowles, 1990), others define it in terms of the specific skills that make up self-directedness (Caffarella, 1983; Smith & Haverkamp, 1977), and others define it in terms of the personality characteristics that are displayed by the self-directed learner (Brookfield, 1986). Various researchers trying to test self-directed learning empirically also have unique operational definitions of the concept, either as a motivational variable, cognitive strategy use, metacognitive self-regulation, effort, or resource management. Regardless of the definition used, however, the theorists and researchers who use the term use it in reference to non-traditional or graduate students when they speak of self-directedness.

The concept of self-directedness that is put forth by these adult learning theorists seems to preclude any cases of independent learning on the part of children, adolescents, and even traditional college students. In spite of the fact that children and adolescents often become interested in a topic and pursue it outside of a classroom setting, adult learning theorists do not see this as self-directed learning behavior. Also not mentioned as being self-directed are college students who have a poor professor and must learn everything they want from the course by finding their own resources and learning the material on their own.

Although the concept of self-directedness intuitively seems to be an important part of human learning, there is not a lot of research that examines the concept in depth. Many definitions are given, usually differing according to the author, but these are rarely backed up with any data regarding the existence of the concept, the type of people who are prone to be self-directed, or if people can be taught to be more self-directed. One factor that contributes to this dearth of research is the measurement of self-directedness (Brookfield, 1986). Most of the work that has been done

has used self-report or interview techniques, although there has been some exploratory work with a self-directedness inventory.

A more valuable way to view self-directed learning may be to try to define the underlying control processes/characteristics that are responsible for its existence in individuals who are engaged in a learning situation. Caffarella and O'Donnell (1987) suggest that the most useful way to view the construct of self-directed learning is as a personality construct. They believe that viewing the construct in this light allows researchers to incorporate both learning skills and motivation as factors that contribute to self-directed learning. The question then becomes what personality characteristics are likely to result in self-directedness. One possible answer is that personality characteristics are responsible for the differences in the amount of expressed self-directedness. A promising personality characteristic that has already been studied in relation to self-directedness is locus of control (Londoner, Linder, Bauer, 1985, 1987; Pratt, 1988).

The locus of control construct has a long history (Rotter, 1966), and there is a voluminous amount of research on the topic. By definition, locus of control has two dimensions: internal and external. Those who have an internal locus of control are likely to view reinforcement as being contingent upon their own behavior, while those who have an external locus of control see reinforcement as contingent upon luck, chance, or the actions of powerful others (Davis & Davis, 1972). These different orientations result in different attributions of success and failure. While both internals and externals are likely to view themselves as responsible for their own successes, internals are more likely to blame themselves for failures than are externals. Externals can be further subdivided into defensive externals, who show their externality only when facing failure, and other externals, who are very likely to be from socially disadvantaged groups and see their lives as completely out of their own control.

Much of the research on locus of control has been done in order to determine what factors differentiate between internals and externals. McNeill and Jacobs (1980) found males to be more internal than females, while Knoop (1981), studying older and younger teachers, found that

internality increased with age. In addition, internals claimed that they were more satisfied and more involved with their lives and their work, although they did not necessarily have higher social and/or job status than externals (Knoop, 1981).

In a review of the literature, Nowicki and Duke (1983) discussed various correlates of locus of control. Externality was found to be related to maladjustment, lower achievement levels, and powerlessness, while internality was found to be related to greater self-acceptance, higher self-esteem, and other aspects of adaptive functioning, such as deeper self-disclosure, greater reflectivity, more altruism, less distancing from strangers, greater persistence, and popularity. Internality was found to correlate negatively with debilitating anxiety, authoritarianism, helplessness, defenselessness, feelings of guilt, and conformity. In younger subjects, locus of control was also found to be positively related to academic achievement.

Sandler, Reese, Spencer, and Harpin (1983) found that locus of control is related to various aspects of self-regulation. Internals create their own performance criteria, utilize multiple cues (i.e., from external feedback and task attributes) when making self-reinforcement decisions, use more positive self-reinforcement than self-penance, and evaluate themselves more positively than do externals. From this evidence, it seems plausible to study self-directed learning in relation to locus of control.

Several researchers in the area of adult learning have indeed used locus of control to explain self-directedness. For instance, Pratt (1988) sees locus of control as an important characteristic of adult learners that influences their ability and/or desire to collaborate with a facilitator. Londoner, Linder, and Bauer (1985), believing that adult learners differ from younger learners in self-sufficiency and self-reliance, administered Rotter's Locus of Control Scale to undergraduate and graduate students from 18 to 50 years old; they found that older subjects and males were more internally oriented. In a follow-up study, the authors found that learners in schools of dentistry, business, and education are all highly internal, and this internality increases with age (Londoner, Linder, & Bauer, 1987).

Caffarella and O'Donnell (1988) have reviewed many studies that have attempted to examine the relationship between locus-of-control beliefs and self-directedness. They conclude that the findings are too inconsistent to offer a clear picture of the relationship. One of the main problems with studies which attempt to assess locus of control is that the concept represents a generalized expectancy and is, thus, more important to individuals in novel or unfamiliar situations (Rotter, 1975). Using a generalized expectancy to predict a specific behavior in a familiar situation is unlikely to produce consistent results. The present study attempts to rectify this problem by using a scale which is more specific to learning, a familiar situation for most college students, and is expected to be more useful when examining the relationship between control beliefs and self-directedness. The scale was developed by Pintrich and his associates for use with college students and is part of a larger measure that assesses motivation as well as learning skills (Pintrich, Smith, Garcia, & McKeachie, 1991).

Pintrich (1989) is not a researcher in the field of adult learning but offers a model of college achievement that includes a locus of control aspect, as well as a self-directed learning aspect. In this model, an individual's beliefs regarding the personal control one has in learning situations are seen as cognitive mediators which influence learning activities and achievement. Pintrich assumes that the greater one's beliefs in personal control over learning, the more likely one will use the learning skills necessary to achieve. The learning skills can also be viewed as components of self-directed learning, as suggested by Caffarella (1983). These skills include use of cognitive strategies (i.e., rehearsal, elaboration, and organization), metacognitive self-regulation (i.e., planning, monitoring, self-regulating), and resource management (i.e., time and effort management, management of study environment, and management of others as educational resources).

Based on this model, Pintrich et al. (1991) developed a self-report instrument (described in greater detail below) to assess students' beliefs in their personal control in learning situations, their use of cognitive strategies, the extent to which they metacognitively self-regulate, and the extent to

which they are able to manage resources effectively. These last three learning skill components will be used to assess self-directed learning in the present study. However, rather than combine the three into a total score, the three are maintained as individual scores in order to assess how personal control and age might relate differently to each of the three components. Examining self-directedness from a three-dimensional rather than a unidimensional perspective will help to clarify the past inconsistent findings that have resulted from different operational definitions of self-directedness.

The present study was designed to overcome the past problems of assessing locus of control and operationalizing self-directedness. However, another problem of previous studies examining the relationship of locus of control and self-directedness is the confounding of locus of control with age. Internality of locus of control does tend to increase with age, and the effects of the two variables have never been partialled out. The present study attempted to do that by examining the relationship of personal control-of-learning beliefs (learning locus of control) and self-directed learning and then comparing these results across three age groups. The main questions are as follow: is belief of personal control-of-learning related to self-directed learning as assessed by three separate indices and do these relationships change as people get older. It was hypothesized that control-of-learning beliefs would be positively related to the three components of self-directed learning. It was also hypothesized that these relationships would increase with age, since people tend to become more internal, and, thus, more self-directing with age.

Method

Subjects

The subjects were 88 undergraduate students and two graduate students from three institutions of higher education in Western New York and Northern Pennsylvania. Twenty-seven were recruited from a large state university center; nineteen were recruited from a smaller state college;. forty-four were recruited from a branch campus of a semi-private university system. These three institutions were chosen based upon the ease of gaining access to subjects. The

sample was a convenience sample; participants at each site were recruited with the help of faculty and/or staff at that campus.

In the total sample, there were twice as many women (60) as there were men (30). Seventy-six percent of the sample was white (68). The next highest percentage was for African American students (15.6% or 14). Asians were represented only at the University center where there were two, and Native Americans were represented only at the branch campus where there were five. Only one hispanic, from the university center, was involved in the study. The students at the university center were primarily upper-level students. The students from the other two campuses were primarily lower-level students.

The mean age for the total group was 23.16 (s = 6.23). Looking at the means for each of the schools separately, the highest mean age occurred at the university center (X = 25.96) followed by the branch campus (X = 22.90). The youngest group was found at the state college (X = 19.80). The mean grade point average for the total group was 2.90 (s = .42). Separately, the grade point average decreased monotonically from the university center (X = 3.34) to the state college (X = 3.03) to the branch campus (X = 2.57).

Materials

The materials used in the study consisted of a biographical information sheet and the Motivated Strategies for Learning Questionnaire (MSLQ). The academic performance variable in the present study is self-reported grade point average. However, since grade point average was confounded with institution attended in the present sample, only correlational analyses were conducted with this variable.

The Motivated Strategies for Learning Questionnaire was designed to objectively assess student motivation level as well as use of cognitive and metacognitive learning strategies as an evaluation instrument for a learning-to-learn class (Pintrich, Smith, Garcia, & McKeachie, 1991). The MSLQ is made up of eighty-one items which are divided into two main scales: motivation and learning strategies. The Motivation Scale is broken down into three value component subscales

(Intrinsic Goal Orientation, Extrinsic Goal Orientation, and Task Value), two Expectancy Component Subscales (Control-of-Learning Beliefs and Self-Efficacy for Learning and Performance), and the Test Anxiety Scale makes up the affective component. The Learning Strategies Scale is made up of five cognitive/metacognitive subscales (Rehearsal, Elaboration, Organization, Critical Thinking, and Metacognitive Self-Regulation) and four Resource Management Strategies Subscales (Time & Study Environment, Effort Regulation, Peer Learning, and Help Seeking). The instrument is a paper-and-pencil questionnaire in which students respond to items according to a seven point Likert-type scale. The instrument can be administered to large groups of students at the same time and is objectively scored. High scores for each of the scales indicate that the student is exhibiting more of the cognitions, emotions, or behaviors that each of the scales is trying to assess. For example, with the Control-of-Learning Beliefs scale, a higher score indicates that the individual sees the self as having more control over learning outcomes than external forces.

Cronbach's alpha was calculated for each of the scales. For Control-of-Learning Beliefs, alpha is .68, while for Metacognitive Self-Regulation it is .79. Both the Cognitive Strategy Use Score and the Resource Management Score used in the present analysis are combined scores. As a result, there is not a single alpha which corresponds to these scales, but an alpha for each of the subscales. For Cognitive Strategy Use, the subscales and corresponding alpha's are Rehearsal (.69), Elaboration (.76), Organization (.64), and Critical Thinking (.80). For Resource Management, the subscales and corresponding alpha's are Time & Study Environment (.76), Effort Regulation (.69), Peer Learning (.76), and Help Seeking (.52). Pintrich et al. (1991) also calculated the correlation of each scale score with the final grade in the learning-to-learn class, providing an indication of predictive validity. The highest correlation with grade of those scales used in the present study was Metacognitive Self- Regulation ($r = .30$), while the lowest was the Help Seeking subscale of Resource Management (.02).

Design

The first hypothesis was tested by examining the significance level, magnitude, and direction of the simple correlations of the control-of-learning beliefs scale and the three self-directed learning components, cognitive strategy use, metacognitive self-regulation, and resource management. The second hypothesis was tested by first transforming the relevant correlations using Fischer's z transformation for non-normalized distribution. Then, each of the desired age comparisons was made by using a z-test for comparing the relative magnitudes of transformed correlations.

Results

The means and standard deviations for each of the variables are shown in Table 1 and the correlation matrix is shown in Table 2. It is possible to test the first hypothesis by examining these correlations. The first hypothesis states that control-of-learning beliefs are related positively to self-directed learning as measured by cognitive strategy use, metacognitive self-regulation, and resource management. This hypothesis was supported for only two of the self-directedness dimensions: cognitive strategy use and resource management. Control-of-learning beliefs are related significantly to use of cognitive strategies ($r = .27$, $p < .05$). The more control that one believes oneself to have over learning outcomes, the more likely one is to use cognitive strategies, such as rehearsal, elaboration, and organization. The amount of variation in cognitive strategy use that can be explained by control-of-learning beliefs is 7.3%.

Control-of-learning beliefs are also significantly related to resource management ($r = .26$, $p < .05$). As expected, the more an individual believes him/herself to be in control of the learning situation, the more likely he/she is to attempt to manage and manipulate resources in the environment, as well as his/her own effort. Control-of-learning beliefs help explain 6.76% of the variation in resource management.

Control-of-learning beliefs are not significantly related to metacognitive self-regulation ($r = .18$, $p > .05$); only 3.24% of the variation in metacognitive self-regulation can be explained by

control-of-learning beliefs. These findings suggest that individuals are as likely (or as unlikely) to engage in metacognitive self-regulation regardless of whether or not they believe learning outcomes to be under personal control.

The second hypothesis concerns the interaction of age and learning beliefs. The sample was divided into three age groups: 17- to 20-year-olds comprised the youngest group; 21- to 25-year-olds made up the middle age group; and the oldest group included those aged 26 to 49. It was hypothesized that the relationships between control-of-learning beliefs and the three self-directed learning components would be different across the three age groups in the sample. The correlations of control-of-learning beliefs and the three self-directed learning components by age group are shown in Table 3.

There are no significant differences among the three age groups in terms of the relationships between control-of-learning beliefs and cognitive strategy use and metacognitive self-regulation. In other words, regardless of age group, the association between control-of-learning beliefs and cognitive strategy use and the association between control-of-learning beliefs and metacognitive self-regulation stay at roughly the same magnitude and direction. Regardless of age, the higher the belief that learning outcomes are under personal control, the greater the use of cognitive strategy use. Regardless of age, metacognitive self-regulation is not significantly related to control-of-learning beliefs

There is a significant difference between the youngest age group and the middle age group in terms of the relationship between control-of-learning beliefs and resource management ($z = 1.86$, $p < .05$). For the 21- to 25-year-olds, there is a significantly stronger, positive relationship between control-of-learning beliefs and resource management than for the youngest subjects in the sample. For this middle group, control-of-learning beliefs can help account for 28.1% of the variation in resource management, while for the youngest group, control-of-learning beliefs help explain only .25% of the variation in resource management. The middle age group and the oldest age group are not significantly different in terms of this relationship.

What these results suggest is that control-of-learning beliefs are related positively to cognitive strategy use, and the relationship remains constant over the age range of seventeen to fifty. Control-of-learning beliefs are not significantly related to metacognitive self-regulation, and this lack of relationship remains constant over the age range of seventeen to fifty. The relationship between control-of-learning beliefs and resource management significantly increases in magnitude from the 17- to 20-year old range to the 21- to 25-year-old range. This relationship declines from the 21-to 25-year-old range to the 26- to 49-year-old range, but not significantly so. In spite of this decline, the relationship between control-of-learning beliefs and resource management is stronger in magnitude for the oldest group than for the youngest group.

Discussion

In sum, it was found that control-of-learning beliefs are significantly related to two of the self-directed learning components, cognitive strategy use and resource management, but not to the third, metacognitive self-regulation. Although this last finding is not what was expected, it does agree with findings in the metacognitive literature that suggest that the two main correlates of metacognitive self-regulation are age and ability (Garner & Alexander, 1989). Since metacognitive self-regulation is believed to be a prerequisite to cognitive strategy use and resource management (Pintrich et al., 1991), a possible explanation for these findings is that metacognitive self-regulation occurs regardless of learning locus, internal or external. However, whether or not the self-regulation is translated into cognitive strategy use or resource management seems to depend on the degree to which the learner believes that learning outcomes are under direct, personal control.

The fact that two of the dimensions of self-directedness were significantly related to control-of-learning beliefs and the other was not may explain the past contradictory findings when the relationship between locus of control and self-directed learning has been studied (Caffarella & O'Donnell, 1987). Since each researcher has defined self-directed learning differently from other researchers, each one may have been capturing a different component of self-directed learning. Those who used a definition that closely resembled cognitive strategy use or resource management

were more likely to find strong, positive relationships, while those using a definition closely related to the concept of metacognitive self-regulation were likely to find a negligible relationship or no relationship at all.

Using the three component definition of self-directed learning offers a broader view of the concept and helps to clear up the confusion created by the earlier studies. In addition, using a locus-of-control-type scale that clearly relates to personal control in learning situations has an advantage over general locus of control scales that tap beliefs regarding personal control over situations in general. The area of learning is a very narrow area, and individuals may have different beliefs about control in this situation than in other situations (Rotter, 1975).

The most interesting findings concern the relationships between control-of-learning beliefs and the three self-directed learning components over the three age groups. Although cognitive strategy use and metacognitive self-regulation maintain consistency in their relationships with control-of-learning beliefs across the three age groups, resource management does not. The relationship between resource management and control-of-learning beliefs increases in magnitude significantly from the youngest age range to the middle age range. The relationship declines again from the middle age group to the oldest age group, but not significantly so. Past studies which have found a clear relationship between age, locus of control, and self-directed learning were probably examining resource management rather than cognitive strategy use or metacognitive self-regulation. However, these findings may have more to do with experience in college learning situations than with age alone. Younger students are also less experienced, and their degree of internality is unrelated to their tendency to engage in resource management, possibly due to the lack of experience. Older students generally have more experience, and their internality is related to greater resource management, possibly due to this greater experience rather than greater age. Future studies in this area should attempt to partial out the effects of age versus the effects of experience.

Although the present findings are provocative, they are based on a very small sample.

Additional data needs to be collected to determine if these findings are maintained in a larger sample. In the present sample, all subjects over 26 were grouped together; with a larger, more representative sample, it may be possible to examine differences among adult learners within this very large range. It is also unclear from the present data how GPA is affected, if at all, by control-of-learning beliefs and the relationship of these beliefs with the self-directed learning components. Future studies need to examine the impact of these relationships on grade point average, holding constant the possible confounding factor of experience in college which may interefere with an examination of the effects of age alone.

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Table 1

Means and Standard Deviations of All Variables in the Analyses (N = 90)

Variable	Mean	Standard Deviation	Range
Age	23.16	6.86	17.00-49.00
Control-of-Learning Beliefs	22.17	3.97	12.00-32.75
Cognitive Strategy Use	22.49	4.78	26.00-80.00
Metacognitive Self-Regulation	55.38	11.98	26.00-80.00
Resource Management	22.74	4.12	12.75-31.75
Grade Point Average	2.90	0.54	1.80-4.00

Table 2

Correlation Matrix -- All Variables in the Analyses

Legend:

LB - Control-of-Learning Beliefs
Cog - Cognitive Strategy Use
MSR - Metacognitive Self-Regulation
RM - Resource Management
GPA - Grade Point Average

	Age	LB	Cog	MSR	RM	GPA
Age	1.00					
LB	.17	1.00				
Cog	.25*	.27*	1.00			
MSR	.31**	.18	.78**	1.00		
RM	.21*	.25*	.59**	.63**	1.00	
GPA	.30**	.26*	.19	.09	.28**	1.00

* $p < .05$; ** $p < .01$

Table 3

Correlations of Control-of-Learning Beliefs with SDL Components for the Three Age Groups

	Age Groups		
	17-20 (n=49)	21-25 (n=19)	26-49 (n=22)
Correlation with:			
Cognitive Strategy Use	.23	.24	.26
Metacognitive Self-Regulation	.09	.15	.23
Resource Management	.05	.53	.29